

REMARKS

On July 9, 2007, an amendment was filed in response to the Non-Final Office Action mailed on April 12, 2007. The July 9, 2007 response included amendments to independent claims 1, 17, 21, 28, 29, and 30 in accordance with comments made by Examiner. On September 11, 2007, Examiner issued a Final Office Action. Reconsideration of the present application in view of the following remarks is respectfully requested.

Claim Rejections – 35 U.S.C. §103(a)

Independent claims 1 and 17 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Small Business Innovation Research to Support Aging Aircraft, Priority Technical Areas and Process Improvements*, published by the National Academy of Sciences, Publication NMAB-497 (hereinafter referred to as NMAB) in view of *Elements of Artificial Neural Networks*, authored by Kishan Mehrotra et al (hereinafter referred to as Mehrotra).

Reconsideration of the rejection of claims 1 and 17 under 35 U.S.C. §103(a) as being unpatentable over NMAB in view of Mehrotra is respectfully requested. Applicant respectfully submits that even if a combination of NMAB and Mehrotra were made, which Applicant does not concede is proper, the purported combination would not disclose all of the elements of independent claims 1 and 17. NMAB and Mehrotra do not teach at least "an input module configured to receive one or more input parameters associated with aeroclastic characteristics of a structure, the one or more input parameters relating to a completed repair of the structure" and "a neural network module coupled to the input module, and configured to generate a transformation of the one or more input parameters to produce at least one aeroelastic analysis result, the transformation based in part on a trained neural network, wherein the at least one aeroelastic analysis result may be used to determine whether the aeroelastic characteristics of the structure with the completed repair are acceptable" of claim 1.

Regarding independent claim 1, in the Office Action, Examiner states that "input parameters relating to a completed repair of the structure" of claim 1 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about "input parameters" or "input parameters relating to a completed repair of the structure." In fact, not a single "input parameter" is disclosed on page 11 of NMAB. The "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. In addition, NMAB does not teach or suggest that such "materials and processes" can be received at an "input module" coupled to "a neural network." to "produce at least one aeroelastic analysis result." Mehrotra also does not teach "input parameters relating to a completed repair of the structure."

Further, regarding claim 1, Examiner states that "a transformation of the . . . input parameters to produce at least one aeroelastic result" is equivalent to "aeroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a system performing an "aeroelastic analysis" to produce an "aeroelastic result" as claimed in claim 1. Similarly, Mehrotra does not teach "a transformation of the . . . input parameters to produce at least one aeroelastic result."

In addition, regarding claim 1, Examiner states that NMAB teaches that the "aeroelastic analysis result may be used to determine whether the aeroelastic characteristics of the structure with the completed repair are acceptable" and that determining "whether the aeroelastic characteristics of the structure with the completed repair are acceptable" is disclosed by "certification of bonded repairs" in NMAB, pg43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis" and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft repair. Similarly, Mehrotra does not teach that

"aeroelastic analysis result may be used to determine whether the aeroelastic characteristics of the structure with the completed repair are acceptable."

Therefore, for at least these reasons, even if a combination of NMAB and Mehrotra were made, the purported combination still would not disclose all of the elements of independent claim 1. As a result, claim 1 is allowable over NMAB in view of Mehrotra. Claims 2-13 and 31-35 which depend from allowable independent claim 1 are therefore also allowable. Regarding independent claim 17, applicant respectfully reiterates the remarks set forth above regarding independent claim 1. Further, even if a combination of NMAB and Mehrotra were made, which applicant does not concede is proper, the purported combination still would not disclose all of the elements of claim 17. NMAB and Mehrotra also do not teach at least "determining input parameters relating to one or more completed repairs performed on a structure," "determining aeroelastic characteristics of the structure," and "determining whether the aeroelastic characteristics of the structure with the one or more completed repairs are acceptable" of claim 17.

Regarding independent claim 17, in the Office Action, Examiner states that "input parameters relating to one or more completed repairs performed on a structure" of claim 17 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about "input parameters" or "input parameters relating to a completed repair of the structure." In fact, not a single "input parameter" is disclosed on page 11 of NMAB. The "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. Similarly, Mehrotra does not teach "input parameters relating to one or more completed repairs performed on a structure."

Further, regarding claim 17, Examiner states that "the aeroelastic characteristics" is equivalent to "aeroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB

simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a method to determine the "aeroelastic characteristics" of the structure as claimed in claim 17. Similarly, Mehrotra does not teach anything regarding "aeroelastic characteristics."

In addition, regarding claim 17, Examiner states that NMAB teaches that the "determining whether the aeroelastic characteristics of the structure with the one or more completed repairs are acceptable" and is disclosed by "certification of bonded repairs" in NMAB, p43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis" and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft repair. Similarly, Mehrotra does not teach "determining whether the aeroelastic characteristics of the structure with the one or more completed repairs are acceptable."

Therefore, for at least these reasons, even if a combination of NMAB and Mehrotra were made, the purported combination still would not disclose all of the elements of independent claim 17. As a result, claim 17 is allowable over NMAB in view of Mehrotra. Claims 18-20 and 36-41, which depend from allowable independent claim 17, are therefore also allowable.

Independent claims 21, 28, 29, and 30 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of NMAB and Mehrotra in view of U.S. Patent No. 5,746,391 to Rodgers (hereinafter referred to as Rodgers). Reconsideration of the rejection of claims 21, 28, 29, and 30 under 35 U.S.C. §103(a) as being unpatentable over NMAB and Mehrotra in view of Rodgers is respectfully requested. Applicant respectfully submits that even if a combination of NMAB, Mehrotra, and Rodgers were made, which Applicant does not concede is proper, the purported combination would not disclose all of the elements of independent claims 21, 28, 29, and 30.

Regarding independent claim 21, applicant respectfully reiterates the remarks set forth above regarding independent claim 1. NMAB, Mehrotra, and Rodgers do not teach at least "receiving at least one input parameter related to a completed repair of an aircraft structure," an "aeroelastic analysis result," or that "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

In addition, Examiner states that "receiving at least one input parameter related to a completed repair of an aircraft structure" of claim 21 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about an "input parameter" or an "input parameter related to a completed repair of an aircraft structure." In fact, not a single "input parameter" is disclosed on page 11 of NMAB. NMAB makes clear that the "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. Similarly, Mehrotra and Rodgers do not disclose "receiving at least one input parameter related to a completed repair of an aircraft structure."

Further, regarding claim 21, Examiner states that "the aeroelastic analysis result" is equivalent to "aeroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a method to determine the "aeroelastic analysis result" of the aircraft as claimed in claim 21. Similarly, Mehrotra and Rogers do not teach anything regarding an "aeroelastic analysis result."

In addition, regarding claim 21, Examiner states that NMAB teaches that the "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight" and is disclosed by "certification of bonded repairs" in NMAB, p43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis"

and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft repair. Similarly, Mehrotra and Rogers do not teach that the "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

Therefore, for at least these reasons, even if a combination of NMAB, Mehrotra, and Rodgers were made, the purported combination still would not disclose all of the elements of independent claim 21. As a result, claim 21 is allowable over the combination of NMAB and Mehrotra in view of Rodgers. Claims 22-27 and 42-44, which depend from allowable independent claim 21, are therefore also allowable.

Regarding independent claim 28, applicant respectfully reiterates the remarks set forth above regarding independent claim 1. Further, even if a combination of NMAB, Mehrotra, and Rogers were made the purported combination still would not disclose all of the elements of claim 28. NMAB, Mehrotra, and Rogers do not teach at least "receiving at least one input parameter related to a completed repair of an aircraft structure," an "aeroelastic analysis result," and "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

Regarding independent claim 28, Examiner states that "receiving at least one input parameter related to a completed repair of an aircraft structure" of claim 28 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about an "input parameter" or an "input parameter related to a completed repair of an aircraft structure." In fact, not a single "input parameter" is disclosed on page 11 of NMAB. NMAB makes clear that the "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. Similarly,

Mehrotra and Rogers do not teach "receiving at least one input parameter related to a completed repair of an aircraft structure."

Further, regarding claim 28, Examiner states that "the aeroelastic analysis result" is equivalent to "aeroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a method to determine the "aeroelastic analysis result" of the aircraft as claimed in claim 28. Similarly, Mehrotra and Rogers do not teach anything regarding an "aeroelastic analysis result."

In addition, regarding claim 28, Examiner states that NMAB teaches that the "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight" and is disclosed by "certification of bonded repairs" in NMAB, p43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis" and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft repair. Similarly, Mehrotra and Rogers do not teach that the "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

Therefore, for at least these reasons, even if a combination of NMAB, Mehrotra, and Rodgers were made, the purported combination still would not disclose all of the elements of independent claim 28. As a result, claim 28 is allowable over the combination of NMAB and Mehrotra in view of Rodgers. Claims 45-48, which depend from allowable independent claim 28, are therefore also allowable.

Regarding independent claim 29, applicant respectfully reiterates the remarks set forth above regarding independent claim 1. Further, even if a combination of NMAB, Mehrotra, and Rodgers were made the purported combination still would not disclose all of the elements of

claim 29. NMAB, Mehrotra, and Rogers do not teach at least "receiving a mass input related to a completed repair," "generate an aeroelastic analysis flutter result," and "the aeroelastic analysis flutter result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

In addition, Examiner states that "receiving a mass input related to a completed repair" of claim 29 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about a "mass input" or a "mass input related to a completed repair." In fact, not a single "input" is disclosed on page 11 of NMAB. NMAB makes clear that the "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. Similarly, Mehrotra and Rogers do not teach "receiving a mass input related to a completed repair."

Further, regarding claim 29, Examiner states that "the aeroelastic analysis flutter result" is equivalent to "aceroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a method to determine the "aeroelastic analysis flutter result" of the aircraft as claimed in claim 29. Similarly, Mehrotra and Rogers do not teach an "aceroelastic analysis flutter result."

In addition, regarding claim 29, Examiner states that NMAB teaches that the "the aeroelastic analysis flutter result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight" and is disclosed by "certification of bonded repairs" in NMAB, p43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis" and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft repair. Similarly, Mehrotra and Rogers do not teach that the "the aceroelastic analysis flutter

result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

Therefore, for at least these reasons, even if a combination of NMAB, Mehrotra, and Rodgers were made, the purported combination still would not disclose all of the elements of independent claim 29. As a result, claim 29 is allowable over the combination of NMAB and Mehrotra in view of Rodgers. Claims 49-51, which depend from allowable independent claim 29, are therefore also allowable.

Regarding independent claim 30, applicant respectfully reiterates the remarks set forth above regarding independent claim 1. Further, even if a combination of NMAB, Mehrotra, and Rogers were made the purported combination still would not disclose all of the elements of claim 30. NMAB, Mehrotra, and Rogers do not teach at least "means for receiving input parameters related to a completed repair of an aircraft structure," an "aeroelastic analysis result," and "the aeroelastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."

In addition, Examiner states that "means for receiving input parameters related to a completed repair of an aircraft structure" of claim 30 is illustrated by "materials and processes" in NMAB, p11:8-25. However, page 11 of NMAB says nothing about "input parameters" or an "input parameters related to a completed repair of an aircraft structure." In fact, not a single "input parameter" is disclosed on page 11 of NMAB. NMAB makes clear that the "materials and processes" referred to by Examiner relates to the appointment of "a committee of experts in . . . materials and processes." NMAB-497, p11:22-25. Similarly, Mehrotra and Rogers do not teach "means for receiving input parameters related to a completed repair of an aircraft structure."

Further, regarding claim 30, Examiner states that the "aeroelastic analysis result" is equivalent to "aeroelasticity" of NMAB at p29:3-p30:31. However, p29:3-p30:31 of NMAB

simply describes the "sources of dynamic loads on an aircraft" and the aerodynamic problems associated therewith. There is no description in page 29 or 30 of NMAB of a method to determine the "acroelastitic analysis result" of the aircraft as claimed in claim 30. Similarly, Mehrotra and Roger do not teach anything regarding an "acroelastic analysis result."

In addition, regarding claim 30, Examiner states that NMAB teaches that the "the acroclastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight" and is disclosed by "certification of bonded repairs" in NMAB, p43:20. However, NMAB clearly states on pg. 43, lines 17-20, that "repair . . . analysis" and "certification of bonded repairs" is one of several "unresolved issues" in the area of aircraft maintenance. Similarly, Mehrotra and Rogers do not teach that the "the aeroclastic analysis result may be used to determine whether the aircraft structure with the completed repair is acceptable for flight."


Therefore, for at least these reasons, even if a combination of NMAB, Mehrotra, and Rodgers were made, the purported combination still would not disclose all of the elements of independent claim 30. As a result, claim 30 is allowable over the combination of NMAB and Mehrotra in view of Rodgers. Claims 52-55, which depend from allowable independent claim 30, are therefore also allowable.

Conclusion

In view of the aforesaid, reconsideration and allowance of all claims at issue are respectfully solicited.

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